



PATENT
Docket No. M 5850A-OS/LUAP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of Eugene R. Zehler

Serial No. 10/051,938

Filed: 01/17/02

TITLE: SHOCK ABSORBER CONTAINING BIODEGRADABLE FLUID

Examiner: Bradley T. King

Art Unit: 3683

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Respectfully submitted,

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BY: Rose A. Stowe DATE: December 15, 2003
Rose A. Stowe

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re:	Patent Application of Eugene R. Zehler	: Group Art Unit: 3683
		:
Appln. No:	10/051,938	: Examiner: Bradley T. King
		:
Filed:	January 17, 2002	: Confirmation No.: 3048
		:
Title:	SHOCK ABSORBER CONTAINING BIODEGRADABLE FLUID	: Attorney Docket
		: No.: M 5850A-OS/LUAP

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. §1.192

Pursuant to the Notice of Appeal filed on June 13, 2003, via facsimile, and received by the U.S. Patent & Trademark Office on the same date, Appellant submits herewith a Brief On Appeal under 37 C.F.R. §1.192, appealing the Examiner's final rejection of pending claims 38-40, 43, 46-48, 52, 54-56, 59, 62-64, 67-70, 73, 76-78, and 81-84 as set forth in the final Office Action dated January 14, 2003 (Paper No. 7), as maintained in the Advisory Action dated May 29, 2003 (Paper No. 10). This Brief On Appeal is being timely filed as a Petition for a four-month extension of time, up to and including December 15, 2003 (December 13, 2003 being a Saturday), including an authorization to charge fees, is being submitted herewith.

Appellant respectfully requests consideration by the honorable Board of Patent Appeals and Interferences and reversal of the Examiner's rejection of all pending claims based on the arguments set forth in the attached brief.

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REAL PARTY IN INTEREST

The real party in interest in the instant appeal is Cognis Corporation, a Delaware corporation, having a place of business at 5051 Estecreek Drive, Cincinnati, Ohio 45232-1446.

RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any related appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in the instant appeal.

STATUS OF THE CLAIMS

Claims 38-40, 43, 46-48, 52-56, 59, 62-64, 67-70, 73 and 76-84 are pending in the instant application on appeal. Claims 53, 79 and 80 are allowed. Claims 38-40, 43, 46-48, 52, 54-56, 59, 62-64, 67-70, 73, 76-78, and 81-84 are the subject of the instant appeal.

Claims 46-48, 62-64 and 76 stand finally rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which is not described in the Specification in such a way as to convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claims 38-40, 43, 52, 54-56, 59, 67-70, 73, 77-78 and 81-84 stand finally rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Pat. No. 5,681,800 of Duncan, *et al.* ("Duncan"), in view of U.S. Pat. No. 2,630,193 of Funkhouser ("Funkhouser"), for the reasons of record set forth in Paper No. 7 and Paper No. 10.

STATUS OF AMENDMENTS

No amendments have been filed in the instant application on appeal subsequent to the Examiner's final rejection of claims 38-40, 43, 46-48, 52, 54-56, 59, 62-64, 67-70, 73, 76-78, and 81-84. Appellant's Request for Reconsideration After Final, filed on May 9, 2003 ("the Request for Reconsideration After Final"), has been considered but was not deemed to place the instant application in a condition for allowance, as indicated in Paper No. 10. An appendix

containing a copy of the claims involved in the appeal, in accordance with 37 C.F.R. §1.192(c)(9), is attached as Appendix A.

SUMMARY OF THE INVENTION

Appellant has discovered that certain polyol esters can be advantageously used as biodegradable, dampening fluids in, for example, shock absorbers. (*See*, Appellant's Specification, p. 2, lines 13-26). Appellant's inventive dampening fluids are both biodegradable and do not suffer from viscosity breakdown like other fluids containing polymeric viscosity index improvers. (*See, id.*).

One embodiment of Appellant's claimed invention is directed to a shock absorber which has a cylinder containing a fluid, wherein the fluid comprises a biodegradable polyol ester, the polyol ester having a polyol component comprising a hindered polyol and a carboxylic acid component comprising a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids; and wherein the fluid is at least 80% biodegradable.. Another embodiment of Appellant's claimed invention is directed to a method of dampening the movement of a mechanical member disposed within a shock absorber using a fluid containing the claimed biodegradable polyol esters.

ISSUES

- (1) Does the instant Specification, including the full disclosure of the properly incorporated U.S. Pat. No. 5,021,179, provide adequate support for claims wherein the carboxylic acid component further comprises a dicarboxylic acid?
- (2) Is the combination of Duncan and Funkhouser insufficient to establish a *prima facie* case of obviousness with respect to the claimed invention?

GROUPING OF THE CLAIMS

For the purposes of the instant appeal, all of the rejected, pending claims do not stand or fall together. The claims rejected under 35 U.S.C. §112, first paragraph, namely claims 46-48, 62-64 and 76, stand or fall together, but apart from the pending claims rejected under 35

U.S.C. §103(a). The claims rejected under 35 U.S.C. §103(a), all of the remaining, rejected claims stand or fall together, but apart from the claims rejected under 35 U.S.C. §112, first paragraph.

ARGUMENT

I. *The Examiner's Rejection Under 35 U.S.C. §112, 1st ¶ is Improper*

A. *The Rejection Under 35 U.S.C. §112, 1st ¶:*

In Paper No. 10, the Examiner maintains the rejection of claims 46-48, 62-64 and 76 under 35 U.S.C. §112, first paragraph, as containing subject matter which is not described in the Specification in such a way as to convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

In Paper No. 7, the Examiner contended that claims 46-51, 62-66 and 76 "have limitations requiring a mixture of monocarboxylic acid and dicarboxylic which are not supported by the disclosure and are held as new matter." (*See*, Paper No. 7, ¶ 3, p. 3).

In Paper No. 10, the Examiner elaborates by stating that Appellant's incorporation by reference of the entire contents of U.S. Pat. No. 5,021,179, has been treated as proper and thus, included in the disclosure. However, the Examiner contends that the instant Specification, including the incorporation by reference, fails to support claims 46-48, 62-64 and 76 (claims 49-51 and 65-66 had been canceled in Appellant's Amendment filed on October 8, 2002, as certain elements of those claims had been incorporated into independent claims). The Examiner argues that, "[t]he passages of 5021179 noted by [Appellant] have been considered, but the passages are only further suggestions of the use of monovalent and divalent acids for esters." (*See*, Paper No. 10, ¶ 5, p. 2). The Examiner goes on to argue that, "[t]he recitation of monocarboxylic and dicarboxylic acids amended into the claims is more specific than the suggested 'monovalent and divalent acids' incorporated by reference and therefore constitutes new matter." (*See, id.*). On this basis, the Examiner maintains that the claims are not supported by the disclosure.

B. Appellant's Traversal:

Appellant respectfully traversed the Examiner's rejection in the Amendment After Final, and initially in Appellant's Amendment, filed on October 8, 2002, in response to Paper No. 3.

Appellant again strenuously, but respectfully, traverses the Examiner's rejection and the contentions and arguments in support thereof, for the reasons set forth below.

C. Appellant's Specification Provides Adequate Support for the Claims:

As stated above, the Examiner has acknowledged, in Paper No. 10, that Appellant's incorporation by reference is proper, and thus, that the instant Specification includes the entire contents of U.S. Pat. No. 5,021,179, as if they had been set forth in their entirety therein.

Appellant respectfully submits that the Specification, as filed, contained original claims which recite esters based upon a mixture of carboxylic acids having from 5 to 9 carbon atoms. (*See, e.g.*, Appellant's Specification, original claims 6, 8, 15, 17 and 26). Additionally, Appellant's Specification describes the carboxylic acid components of the polyol esters according to the invention as follows:

The carboxylic acid components of the polyol esters according to the invention are aliphatic carboxylic acids having from 5 to 18 carbon atoms. Thus, the polyol esters suitable for use in the shock absorbers according to the invention are hindered polyol esters of C₅₋₁₈ carboxylic acids. The C₅₋₁₈ carboxylic acids can be linear or branched and are preferably linear. The esters according to the invention can be made by the method described in U.S. patent 5,021,179, the entire contents of which are incorporated herein by reference. The final formulated shock absorber fluid will contain individual hindered polyol esters of C₅₋₁₈ carboxylic acids **or combinations of 2 or more of such esters** and will also typically contain antioxidants, corrosion inhibitors, antiwear additives and seal conditioners.
(*See, Appellant's Spec., p. 3, lines 16-26 (emphasis added)*).

Accordingly, Appellant submits that the disclosure clearly contemplates mixtures of polyol esters based upon various carboxylic acids, including mixtures of carboxylic acids disclosed in the incorporated U.S. Pat. No. 5,021,179.

It should then be noted that column 3, lines 22-39 of U.S. Pat. No. 5,021,179 ("the '179 patent"), specifically, lines 24-26, contain disclosure of certain esters wherein it is preferred, "to react a single kind of alcohol [] with a mixture of monovalent and divalent acids" (See, the '179 patent, col. 3, lines 22-39). This is a clear description of esters based upon mixtures of monocarboxylic (*i.e.*, monovalent) and dicarboxylic (*i.e.*, divalent) acids. Mixtures of monocarboxylic acids and dicarboxylic acids are described specifically, and broadly, throughout the '179 patent, for example, at col. 3, lines 4-10, lines 40-41, and at col. 4, lines 13-25. The '179 patent states,

For higher viscosity ranges, *some divalent acyl groups* are preferred, as it is believed that esters containing two or more alcohol moieties *joined by such divalent acyl groups*, with all the other hydroxyl positions on the alcohols corresponding to the esterified by monoacyl groups, are particularly advantageous types of esters for use according to this invention.

(See, the '179 patent, col. 3, lines 4-10 (*emphasis added*)).

The '179 patent also specifically states that, "[w]hether the acids used for esterification are all monovalent or contain some acids of higher valency, reaction between the alcohol(s) used and the acid(s) has been found to proceed more effectively if the quantity of acid charged to the reaction mixture initially is . . . an excess . . ." (See, the '179 patent, col. 3, lines 40-47 (*emphasis added*)). Finally, the '179 patent also discloses that, "[a]n independent constraint on the ratio between monovalent and higher valency acids to be reacted is that too large a fraction of acids with more than one valence may result in an undesirable amount of high molecular weight polymer, in view of the fact that all or substantially all of the alcohol(s) to be reacted also have at least two reactive groups. For this reason, it is increasingly preferred that the ratio of equivalents from monovalent acids to the equivalents from *divalent or higher valent acids* reacted be at least 1, 1.76, or 2.69. Also, the amount of acyl groups with a valence higher than 2

preferably is no more than 2 no. % of the total of all acyl groups.” (See, the ‘179 patent, col. 4, lines 13-25 (*emphasis added*)).

Appellant submits that a carboxylic acid component containing both monocarboxylic and dicarboxylic acid constituents is fully supported by the disclosure in the instant application, including the incorporation of the ‘179 patent by reference. However, the Examiner has argued that the disclosure does not support the specific inclusion of a dicarboxylic acid with the claimed mixture of monocarboxylic acids. The Examiner also cites *In re Smith*, 458 F.2d 1389, 173 USPQ 679 (CCPA 1972), in support of this argument.

Appellant respectfully submits that the disclosure provided by the Specification, including the incorporation by reference, fully supports the claims, and that one of ordinary skill in the art would recognize and be apprised of the fact that Appellant had possession of the claimed invention at the time the instant application was filed.

The Examiner has apparently relied upon the Court’s statement in *In re Smith*, that, “. . . the rule . . . that the disclosure of a genus and a species of a subgenus is a sufficient description of the subgenus . . . is [not] consonant with either the letter or spirit of the description requirement of §112”, to support his contention that a mixture of dicarboxylic acids and certain monocarboxylic acids is not supported. (See, *In re Smith*, 458 F.2d 1389, 1395 (CCPA 1972)). Appellant respectfully disagrees and submits that the Examiner’s reliance on Smith is misplaced.

To begin with, courts have since held that, “[b]roadly articulated rules are particularly inappropriate in [§112 rejections].” (See, *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976), citing *In re Smith*, 458 F.2d 1389 (CCPA 1972)). The Court in *Wertheim* went on to state that questions of adequate disclosure to support claims require,

an analysis of each case on its facts to determine whether an application conveys to those skilled in the art the information that the applicant invented the subject matter of the claims. In other words, we must decide whether the invention appellants seek to protect by their claims is part of the invention that appellants have described as theirs in the specification. That what appellants claim as patentable to them is less than what they describe as their invention is not conclusive if their specification also reasonably describes that which they do claim. Inventions are

constantly made which turn out not to be patentable, and applicants frequently discover during the course of prosecution that only a part of what they invented and originally claimed is patentable.
(*See, In re Wertheim* at p. 263).

Thus, any supposed "rule" set forth in *Smith* cannot be said to automatically apply to the instant application and its unique facts without the required fact-intensive analysis.

In any event, the situation presented herein is not the same as that which was addressed in the *Smith* case. The presently claimed mixtures of a dicarboxylic acid and monocarboxylic acids are not a subgenus based upon a disclosure of a single species within that subgenus. To the contrary, Appellant's Specification broadly discloses mixtures of monovalent and divalent carboxylic acids for the preparation of polyol esters. Appellant's Specification clearly contemplates the use of divalent carboxylic acids with a variety of monocarboxylic acids, and mixtures thereof.

It is submitted that Appellant's Specification provides support for the inclusion of a divalent carboxylic acid with any of the disclosed monocarboxylic acids and that one of ordinary skill in the art would clearly recognize that Appellant had possession of such an invention at the time the instant application was filed. In this instance, to hold otherwise would require Appellant to literally disclose every possible combination of monovalent and divalent carboxylic acids. Appellant has specifically disclosed the claimed mixtures of monocarboxylic acids. Appellant has further disclosed, through the proper incorporation by reference, that the carboxylic acid component may contain a dicarboxylic acid. Accordingly, those of ordinary skill in the art would readily understand that the optional dicarboxylic acid can be incorporated into any of the disclosed monocarboxylic acid components or mixtures.

Accordingly, Appellant submits that the claims are fully supported by the original disclosure in the instant application, and that no new matter has been introduced into the claims. Reconsideration and reversal of the Examiner's rejection under 35 U.S.C. §112, first paragraph by the Honorable Board are respectfully requested by Appellant.

II. The Examiner's Rejection Under 35 U.S.C. §103(a) is Improper

A. The Rejection Over Duncan in view of Funkhouser:

In Paper No. 10, the Examiner maintains the rejection of claims 38-40, 43, 52, 54-56, 59, 67-70, 73, 77-78 and 81-84 under 35 U.S.C. §103(a), as being unpatentable over Duncan, in view of Funkhouser. Specifically, the Examiner contends that Appellant's claimed invention is obvious in view of a standard shock absorber disclosed in Funkhouser, taken in conjunction with the polyol ester of Duncan's Table 8, *i.e.*, the "TPE/C810/Ck8" ester, which, according to the Examiner's contentions, contains a carboxylic acid component that is a blend of linear C₆ and C₈ acids. On this basis the Examiner argues that the claimed invention is obvious.

B. Appellant's Traversal:

Appellant respectfully traversed the Examiner's rejection in the Amendment After Final, and initially in Appellant's Amendment, filed on October 8, 2002, in response to Paper No. 3.

Appellant again strenuously, but respectfully, traverses the Examiner's rejection and the contentions and arguments in support thereof, for the reasons set forth below.

C. Lack of Prima Facie Obviousness:

First, Duncan discloses the use of linear carboxylic acids blended with branched acids, and exemplifies the use of a "C810" linear acid component. "C810 denotes predominantly a mixture of *n*-octanoic and *n*-decanoic acids, and may include small amounts of *n*-C₆ and *n*-C₁₂ acids." (*See*, Duncan, Table 1, notes). There is no teaching that the "C810" component does in fact contain a mixture as claimed or that it should contain such a mixture, only a notation that the product might have other acids present. Moreover, there is no indication that a "C810" linear acid component containing a C₆ acid should be used as a dampening fluid.

Second, there is no teaching or suggestion that the presence of the possible C₆ acid is beneficial in any use, much less the specific use as a dampening fluid. There is no indication that the use of a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids would be beneficial. Nothing suggests that a C810 component which does contain a C₆

acid is better or should be used to obtain polyol esters which are more biodegradable or have better dampening capabilities. Furthermore, Duncan is primarily concerned with the combination of linear and branched acids to achieve its alleged results, not any specific mixture of linear acids.

Third, given the lack of any teaching that requires a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids, the lack of any benefit associated with such a mixture, and the focus on the presence of branched acids along with the linear C₈10 component, one of ordinary skill in the art would not have a reasonable expectation of success, nor would one be inclined to seek out and use mixtures as claimed by Appellant.

Accordingly, Appellant submits that the Examiner has failed to establish a *prima facie* case of obviousness based upon the combined Duncan and Funkhouser references. Reconsideration and reversal of the Examiner's rejection under 35 U.S.C. §103(a), first paragraph by the Honorable Board are respectfully requested by Appellant.

CONCLUSION

In view of the arguments set forth above, Appellant submits that the Examiner's rejections under 35 U.S.C. §112, 1st ¶ and §103(a) are improper, and that all claims on appeal are fully supported by the Specification and patentably distinguish over the prior art of record and known to Appellant, either alone or in combination. Accordingly, Appellant respectfully requests that the Honorable Board find for Appellant and reverse the Examiner's final rejections.

Appl. No.: 10/051,938
Group Art Unit: 3683
Appellant's Brief On Appeal

Respectfully submitted,

EUGENE R. ZEHLER

December 15, 2003
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APPENDIX A

Claims Pending in the Instant Application On Appeal:

38. A shock absorber comprising a cylinder, the cylinder defining a chamber therein and containing a fluid; a piston rod sealingly projecting into the cylinder, the piston rod being axially displaceable with respect to the cylinder; a piston attached to the piston rod, the piston being slidably disposed within the cylinder to sealingly divide the cylinder into a first chamber and a second chamber; a passageway disposed in at least a portion of the piston providing for fluid communication between the first and second chambers; wherein the fluid comprises a biodegradable polyol ester, said polyol ester having a polyol component and a carboxylic acid component, the polyol component comprising a hindered polyol and the carboxylic acid component comprising a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids; and wherein said fluid is at least 80% biodegradable.

39. The shock absorber according to claim 38, wherein said hindered polyol is selected from the group consisting of trimethylolpropane, neopentyl glycol, pentaerythritol, dipentaerythritol, and mixtures thereof.

40. The shock absorber according to claim 38, wherein said hindered polyol comprises trimethylolpropane.

43. The shock absorber according to claim 38, wherein the carboxylic acid component further comprises a branched carboxylic acid having from about 5 to about 10 carbon atoms.

46. The shock absorber according to claim 38, wherein said carboxylic acid component further comprises a dicarboxylic acid.

47. The shock absorber according to claim 46, wherein said dicarboxylic acid comprises a short chain dicarboxylic acid, and a substantial portion of said biodegradable polyol ester comprises polyol components having all but one alcohol functionality of each hindered polyol esterified with the monocarboxylic acid.

48. The shock absorber according to claim 47, wherein said polyol component comprises trimethylolpropane.

52. The shock absorber according to claim 38, wherein said fluid further comprises at least one component selected from the group consisting of antioxidants, corrosion inhibitors, antiwear additives, and seal conditioners.

53. A shock absorber comprising a cylinder, the cylinder defining a chamber therein and containing a fluid; a piston rod sealingly projecting into the cylinder; the piston rod being axially displaceable with respect to the cylinder; a piston attached to the piston rod, the piston being slidably disposed within the cylinder to sealingly divide the cylinder into a first chamber and a second chamber; a passageway disposed in at least a portion of the piston providing for fluid communication between the first and second chambers; wherein the fluid comprises a biodegradable polyol ester, said polyol ester having a polyol component and a carboxylic acid component, the polyol component comprising trimethylolpropane, the carboxylic acid component comprising a mixture of C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids; and wherein said fluid is at least 80% biodegradable.

54. A shock absorber containing a hydraulic fluid for dampening movement of associated mechanical members therein, said hydraulic fluid comprising a biodegradable polyol ester, said polyol ester having a polyol component and a carboxylic acid component, the polyol component comprising a hindered polyol and the carboxylic acid component comprising a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids; and wherein said fluid is at least 80% biodegradable.

55. The shock absorber according to claim 54, wherein said hindered polyol is selected from the group consisting of trimethylolpropane, neopentyl glycol, pentaerythritol, dipentaerythritol, and mixtures thereof.

56. The shock absorber according to claim 54, wherein said hindered polyol comprises trimethylolpropane.

59. The shock absorber according to claim 54, wherein the carboxylic acid component further comprises a branched carboxylic acid having from about 5 to about 10 carbon atoms.

62. The shock absorber according to claim 54, wherein said carboxylic acid component further comprises a dicarboxylic acid.

63. The shock absorber according to claim 54, wherein said dicarboxylic acid comprises a short chain dicarboxylic acid, and a substantial portion of said biodegradable polyol ester comprises polyol components having all but one alcohol functionality of each hindered polyol esterified with the monocarboxylic acid.

64. The shock absorber according to claim 63, wherein said polyol component comprises trimethylolpropane.

67. The shock absorber according to claim 54, wherein said fluid further comprises at least one component selected from the group consisting of antioxidants, corrosion inhibitors, antiwear additives, and seal conditioners.

68. A method of dampening the movement of a mechanical member disposed within a shock absorber, wherein said mechanical member defines a first chamber and a second chamber within the shock absorber and includes at least one passageway for fluid communication between the first and second chambers; said method comprising providing a hydraulic fluid in the first and second chambers, the hydraulic fluid comprising a biodegradable polyol ester, said polyol ester having a polyol component and a carboxylic acid component, the polyol component comprising a hindered polyol and the carboxylic acid component comprising a mixture of two or more C₅, C₆, C₇, C₈ and C₉ linear monocarboxylic acids, wherein said fluid is at least 80% biodegradable, such that passage of the hydraulic fluid through the at least one passageway dampens the movement of the mechanical member.

69. The method according to claim 68, wherein said hindered polyol is selected from the group consisting of trimethylolpropane, neopentyl glycol, pentaerythritol, dipentaerythritol, and mixtures thereof.

70. The method according to claim 68, wherein said hindered polyol comprises trimethylolpropane.

73. The method according to claim 68, wherein the carboxylic acid component further comprises a branched carboxylic acid having from about 5 to about 10 carbon atoms.

76. The method according to claim 68, wherein said carboxylic acid component further comprises a dicarboxylic acid.

77. The shock absorber according to claim 38, wherein said fluid is at least 90% biodegradable.

78. The shock absorber according to claim 38, wherein said polyol component consists essentially of trimethylolpropane.

79. The shock absorber according to claim 53, wherein said fluid is at least 90% biodegradable.

80. The shock absorber according to claim 53, wherein said polyol component consists essentially of trimethylolpropane.

81. The shock absorber according to claim 54, wherein said fluid is at least 90% biodegradable.

82. The shock absorber according to claim 54, wherein said polyol component consists essentially of trimethylolpropane.

83. The method according to claim 68, wherein said fluid is at least 90% biodegradable.

84. The method according to claim 68, wherein said polyol component consists essentially of trimethylolpropane.